

PATENT

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TRANSPORT, LAUNCH AND RECOVERY CRAFT

This application claims priority based on U.S. Provisional Patent Application Serial No. 60/399,406, entitled "Launch and Recovery Craft Apparatus," and filed July 31, 2002.

BRIEF DESCRIPTION OF THE DRAWINGS

Fig. 1 is a perspective view of one embodiment of a transport, launch and recovery marine craft, shown with a hinged well deck and the stern gate in a lowered position;

Fig. 2 is a perspective view of a trailer mounted Dolphin Class SDV;

Fig. 3 is a top view of one embodiment of the craft, showing a SDV loaded within the hinged well deck, with both the well deck and the stern gate raised;

Fig. 4 is a side view of one embodiment of the craft, with the hinged well deck in a raised position and the stern gate lowered;

Fig. 5 is a rear view of one embodiment of the craft, showing the well deck in a raised position and the stern gate lowered; and

Fig. 6 is a side view with a partial sectional view of one embodiment of the craft, with both the well deck and the stern gate in a lowered position.

These drawings are provided for illustrative purposes only and should not be used to unduly limit the scope of the present invention.

DETAILED DESCRIPTION OF EMBODIMENTS OF THE INVENTION

The marine craft **100** of the present invention is designed to transport, deploy and retrieve cargo **110**. In one embodiment, the cargo **110** comprises a marine vessel distinct from the craft **100**. In other embodiments, such marine vessel is submersible and can navigate similar to a small submarine. In yet other embodiments, the marine vessel cargo **110** comprises a Dolphin Class swimmer delivery vehicle (SDV).

The craft **100** in one embodiment provides the capability for rapid transport of SDVs **110** in both training and operational scenarios. In other embodiments, the craft can deploy a SDV having a crew of up to eight personnel and their equipment. In yet other embodiments, the craft **100** has a fully loaded cruise speed of up to 26 knots, carries 1,000 gallons of diesel fuel and has a cruising range of 500 nautical miles. In yet other embodiments, the craft **100** provides fast, long-range, inconspicuous transportation of SDVs.

The craft **100** comprises several standard components for a seaworthy vessel, including a hull **20**, a bow **21** and a stern **25**, and selectively including a fore deck **22** and a cabin **24**. The embodiments of the craft **100** further comprise components for transporting, deploying and retrieving cargo **110**, for example, a

SDV. In one embodiment, the craft 100 comprises an open hull portion 31 at the stern 25. In other embodiments, the open hull portion 31 is defined by a pair of spaced apart buoyant structures 26, 28 that extend rearwardly from the bow 21 of the craft 100 at laterally opposite sides thereof. The stern 25 has an open end 29 for ingress and egress of cargo floating in the water to and from the open hull portion 31. A well deck 30 is secured within the open hull portion 31. In yet other embodiments, the well deck 30 is configured to receive and support various cargo 110 therein, for example, a SDV. The hull 20 is suitably configured for travel through water. In one embodiment, the hull 20 is configured for rapid travel through water.

The well deck 30 is hinged at a connected end 34 to a transverse portion of the hull generally adjacent the open hull portion 31. The well deck 30 in one embodiment includes upstanding wall 32 and sidewalls 36, 38, which may be connected at their respective intersections. The upstanding wall 32 extends from the connected end 34, and the upstanding sidewalls 36, 38 extend from laterally opposite sides of the well deck that connect the connected end 34 and the stern end 35. The well deck 30 is configured to fit within the open hull portion 31.

In one embodiment, the well deck 30 has a hinged stern gate 39 which selectively raises and lowers by any known means. The stern gate 39 is located at a stern end 35 of the well deck 30 and is generally positioned at the open end 29 of the open hull portion 31. The stern gate 39 raises and lowers about its hinged securement in order to open and close access to the well deck 30 and to aid in

retaining cargo 110, for example, a SDV, within the well deck 30. In yet other embodiments, the well deck 30 further comprises an upwardly facing bottom surface 33 for supporting cargo 110 received within the well deck 30.

In one embodiment, the well deck 30 further comprises a cradle (not shown) with damped, flexible mounts (not shown) secured to the bottom surface 33 for mitigating shock loads imparted on the cargo 110 during high-speed transit.

Means is generally provided on the craft 100 for selectively raising and lowering the stern end of the well deck 30 relative to the connected end 34. In one embodiment, when the well deck 30 is in a raised position, as shown in FIGS. 3, 4 and 5, the exterior bottom of the well deck 30 is substantially aligned with the exterior surface of the hull 20 such that the hull generally appears as a contiguous piece from bow 21 to stern 25. In other embodiments, the exterior bottom of the well deck 30 in a raised position matches the exterior bottoms of the buoyant structures 26, 28 to provide the appearance and functionality of a single shell hull.

In one embodiment, the raising and lowering means comprises hydraulic or pneumatic cylinders 58 extending between a raised, overhead support 50 and the well deck 30. The overhead support 50 extends between the buoyant structures 26, 28 in proximity to the stern 25 of the craft 100. The overhead support 50 includes a first upright portion 52, a second upright portion 54, and a structural bridge 56 extending therebetween. More than one raised overhead support 50 may be used, as shown in FIGS. 3, 4 and 6.

The cylinders 58 are connected in one embodiment at an upper end 57 thereof to the structural bridge 56 and at a lower end 59 thereof to the upper edge of the upstanding sidewalls 36, 38 of the bottom well deck 30, as shown in FIG. 1. In other embodiments, the lower end 59 of each cylinder 58 may be connected directly to the bottom surface 33 of the well deck 30 as shown in FIG. 5 and FIG. 6.

In one embodiment, the cylinders 58 lower the well deck 30 about the connected end 34 into a lowered position as shown in FIG. 1 and FIG. 6 for ease of selectively deploying and retrieving cargo 110, for example, a SDV.

In one embodiment, a suitable winch 60 located in a forward portion of the craft 100 adjacent the open hull portion 31 is used to retract a cable 62 connected between the craft 100 and the cargo 110, to pull the cargo into the well deck 30. In other embodiments, the winch 60 and cable 62 further aid in securing the cargo 110 within the well deck 30.

When floating cargo 110, such as a SDV, is retrieved from the water and secured within the well deck 30, the cargo is positioned for transport by raising the well deck 30 about the connected end 34 with cylinders 58, as shown in FIG. 3 and FIG. 4. In one embodiment, the winch 60 is alternatively used to extend the cable 62 to deploy the cargo 110 from the craft 100, when the well deck 30 is lowered into a lowered position as shown in FIG. 1 and FIG. 6.

Cargo 110 may be loaded within the well deck 30 upon damped, flexible mounts (not shown) provided in the well deck 30. In one embodiment, the cargo

110, once loaded, is secured in place with a suitable releasable fastening means 70, such as straps, clamps, line, cord, cable, etc.

In one embodiment, a suitable cover (not shown) is used to cover the cargo when the craft 100 is underway. The cover may be a soft top, canvas, or tarp, which completely covers the open hull portion 31 and the cargo.

In one embodiment, the craft 100 is manufactured at least in part of fiberglass and/or aluminum or other materials suitable for a marine craft and for light weight, corrosion resistance and structural strength.

In one embodiment, the craft 100 is powered by at least one engine (not shown) coupled to one or more jet drives 80. In other embodiments, the engines are six cylinder in-line diesel engines rated at about 420 bhp each. In yet other embodiments, the craft 100 has a fuel capacity of about 1,000 gallons. In yet other embodiments, the engines will provide a fully loaded cruising range of 500 nautical miles.

In one embodiment, the craft 100 is fitted with a plurality of hard points (not shown) that enable the craft 100 to be lifted by a larger ship's crane (not shown), and deployed into the water with cargo pre-loaded in the well deck 30.

The scope of the present invention is not strictly limited to the specific embodiments disclosed herein. The invention may be practiced by one skilled in this art by utilizing numerous features and adaptations practiced in the art. Such features and adaptations are intended to be included within the scope of this disclosure, and the accompanying claims.